

ABOUT **Hessler Associates, Inc.**

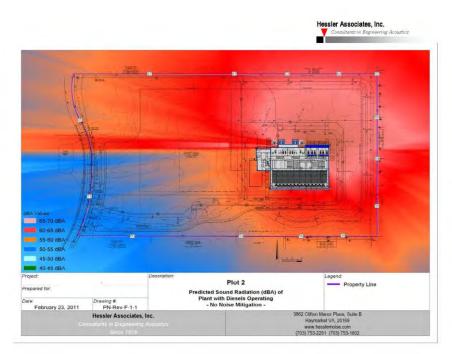
- Founded 1976
- Principal: George F. Hessler P.E., Board Certified INCE
- B.S. The Johns Hopkins University, Baltimore, Maryland
- Principal has nearly 5 decades of experience in Community Noise issues
 - Active member of American National Standards Institute (ANSI)
 - Principal Author: ANSI S12.9 Part 7
 - Co-author ANSI B133.8
- •Author or co-author of over 30 peer-reviewed Journal Articles many involving community noise issues
- Hessler Associates has unique acoustical design experience and is a major acoustical designer of Quiet Facilities and Power Plants located around the world

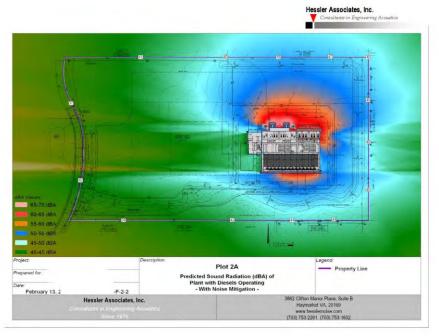




The firm has designed the noise abatement required at data centers located throughout the country and four projects in Loudoun County, Virginia. The above shows an Ohio project designed to 45 dBA to be compatible with adjacent residences.



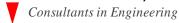




Without

Computer noise model of Ohio data center without and with proper noise controls

Hessler Associates,



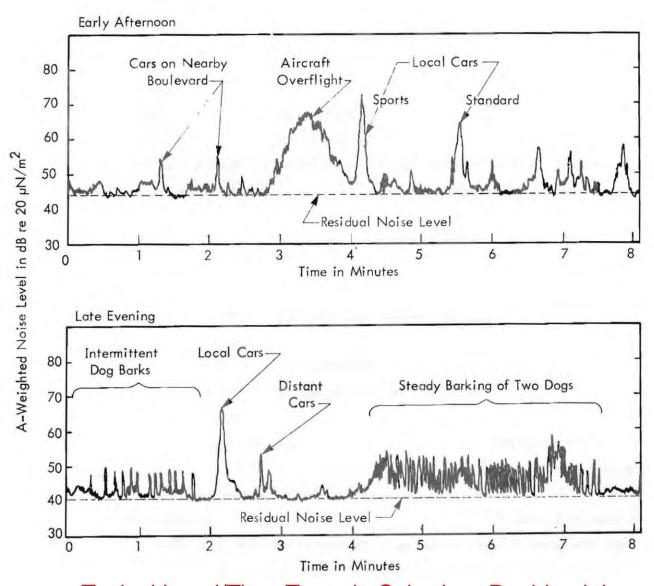
Sound levels are commonly expressed in decibel sound levels, labeled dBA and range from the Threshold of Hearing to the Threshold of Pain for a range of 0 to 130 dBA

Common Sounds and Associated Sound Pressure Levels

SOUND
SUBJECTIVE LEVEL
RESPONSE (dBA) DESCRIPTION*

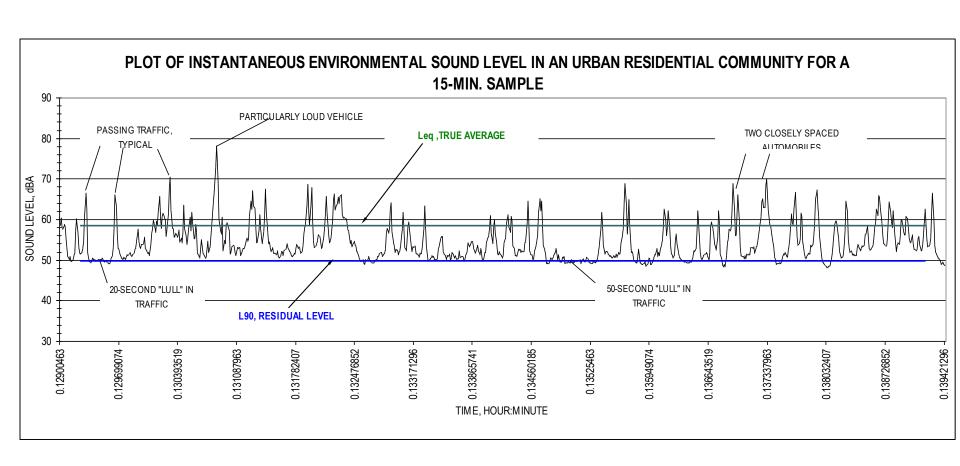
SLIDE 4

Broadband sounds withour prominent tones or excessive low frequency content THRESHOLD OF PAIN 100' FROM AIRCRAFT JET ENGINE AT FULL POWER 120 INTOLERABLE DEAFENING 110 → 400' FROM AIRCRAFT JET ENGINE AT FULL POWER INSIDE DIESEL ENGINE POWER PLANT NEXT TO ENGINE CASING NOISY CLOSE TO LARGE RIVER WATERFALLS 1 M FROM TYPICAL GAS TURBINE/GENERATOR POWER UNIT INSIDE MODERN SEDAN AT 65 mph - WINDOWS OPEN IN JET AIRLINER, FRONT AWAY FROM ENGINES VENTILATION NOISE LOUD CAR PASSING BY ON RURAL ROAD - PEAK LEVEL - INSIDE MODERN SEDAN AT 65 mph - WINDOWS CLOSED NORMAL CONVERSATIONAL LEVEL 60 OUTSIDE, 5' FROM TYPICAL A/C UNIT MODERATE TO QUIET TREES RUSTLING IN A LIGHT WIND 50 INSECT NOISE AT NIGHT - DISTANT TRAFFIC OR FARM EQUIPMENT SUBURBAN AREA - TYPICAL DAYTIME LEVEL HUM OF A COMPUTER FAN IN A QUIET ROOM TYPICAL CONFERENCE ROOM **FAINT** INSIDE TYPICAL BEDROOM (SUBURBAN OR RURAL AREA) NO HVAC FANS ON RURAL AREA DURING CALM CONDITIONS RURAL OR REMOTE AREA-CALM & STILL CONDITIONDS REMOTE DESERT AREA - NO WIND **EXTREMELY** QUIET ■ LOWEST SOUND LEVEL DETECTABLE WITH MOST INSTRUMENTS THEORETICAL THRESHOLD OF HEARING



Typical Level/Time Trace in Suburban Residential





Typical Level/Time Trace in an Urban Residential



RESIDUAL LEVEL, dBA — L90

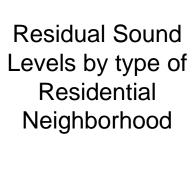
70

40

30

20

RESIDENTIAL DESCRIPTOR





Sound Levels in Loudoun County

NORMAL SUBURBAN RESIDENTIAL, AVERAGE=43 dBA

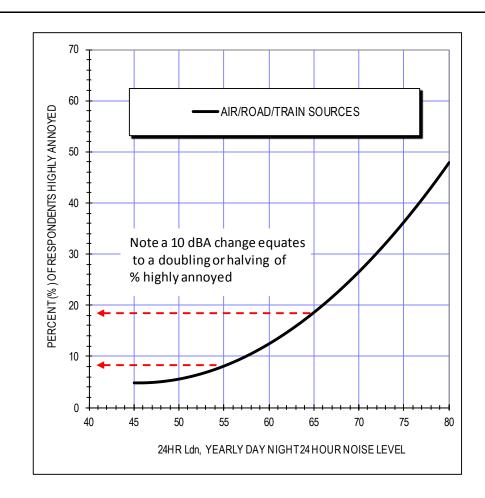
URBAN RESIDENTIAL, AVERAGE=48 dBA

QUIET SUBURBAN RESIDENTIAL, AVERAGE=38 dBA

VERY QUIET SUBURBAN OR RURAL RESIDENTIAL, AVERAGE=33 dBA

VERY QUIET RURAL OR REMOTE AREA, AVERAGE=28 dBA

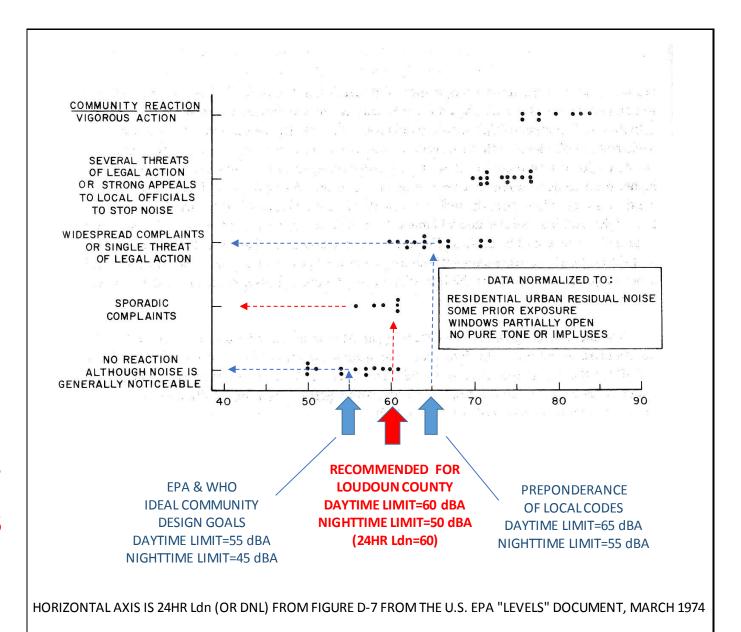
The U.S. EPA created a 24 hour community measurement metric called the day/night level DNL or Ldn that has become the worldwide standard for assessing community noise.



The Shultz Curve created by Ted Shultz from a landmark community noise study for

U.S. Transportation sources, the principle content of community noise

In a landmark study the EPA established a nationwide design goal of DNL = 55 dBArequired to protect the public health and welfare of citizens. This equates to ordinance limits of 55 dBA Daytime and 45 dBA Nighttime





	Comparison of Local Day and Nighttime Noise Limits for Continuous Noise at Residential Zones				
	Daytime	Nighttime	Comment		
	dBA	dBA			
Loudoun County	55	55	Under review		
Prince William County	60	55			
Fauquier County	"Unreasonable Language"				
Montgomery County	65	55			
Fairfax County	60	55	Under review		
Town of Leesburg	70	55	Under review		
State of Maryland	65	55			
Sate of Virginia	None	None			

Table 2.4-1: Comparison of Local Ordinances to the current Loudoun Zoning Ordinance

The above values reflect economic competitive reality.

Resident complaints can be expected at these limits and above.

The preferred recommendation for the Loudoun County Noise Ordinance is 5 dBA lower than the above limits at 60 dBA during daytime and 50 dBA during nighttime hours to lower complaint predictions by approximately 50%



SUMMARY SLIDE

1. ORDINANCE SOUND LEVEL LIMITS

(RESIDENTIAL RECEPTORS ONLY)

A. EXISTING ORDINANCE
55 dBA APPLICABLE ANYWHERE AT ANYTIME

B. PROPOSED DRAFT ORDINANCE 1

A-WTD SOUND LEVEL LIMITS THAT CONSIDER COUNTY AMBIENT SOUND LEVELS

MIXED USE SUBURBAN NON-SUBURBAN

APPLIACABLE ANYTIME 60 55 45

C. CONSULTANT'S PREFERRED RECOMMENDATION - LOWER NIGHTTIME LEVELS TO REDUCE ANNOYANCE

	MIXED USE	SUBURBAN	NON-SUBURBA
DAYTIME	65	60	50
NIGHTTIME	60	50	40

2. OTHER CHANGES

DEFINITIONS

DEVELOPED AND ADDED SOUND TESTING METHODOLOGY AND DEFINITIONS RECOGNIZES THE WIDE RANGE OF AMBIENT SOUND LEVELS IN THE COUNTY



Thank You For Your Attention.